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Digital story telling using iPods

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CHAPTER 4

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Abstract:
This chapter describes the experience of using iPods with preservice early childhood educators in an introductory ICT course. The approach taken was to use the mobile devices, not as the object of study in themselves, but as cognitive tools to be used to complete a complex and authentic task. Students used the iPods in groups to create digital stories appropriate for very young children, in the style of a children's picture book. The research explored the students' responses to the task and the pedagogical affordances of the devices in the early childhood setting.

The challenge

Many teacher education courses offer units or subjects in Information and Communication Technologies (ICTs), in order to prepare neophyte teachers for the 21st century classroom. It is envisaged that such a classroom is one infused with technology, where students use technologies as cognitive tools to solve problems and create realistic and accomplished products. However, instead of preparing these future teachers to use technologies in creative and innovative ways, teacher education courses often focus on teaching *about* the technologies themselves, rather than how students can use them as 'partners in cognition' (Salomon, 1991), or to learn *with*, rather than *from*, technologies.

Too often, ICT courses focus on the hardware and software that is deemed appropriate in classrooms, where topics include: how to create a document using word processing software, how to make a spreadsheet, how to create a presentation (such as PowerPoint), how to access the internet and use browsers, and how to make a webpage using simple html. Such an approach has been likened to teaching 'hammer' rather than 'carpentry' (Oppenheimer, 1997, p. 62).

Instead, the learner, the technology tool, and the activity that students complete can form a joint learning system, where they build expertise, not only in the tool itself but also in the learning environment and activity within which they make use of the tool (Kim & Reeves, 2007). If such a learning environment is an authentic and complex one, it would provide: an authentic context and task; opportunities to access expert performance; multiple perspectives; opportunities for collaboration, reflection, and articulation; scaffolding by the teacher, and integrated, authentic assessment (Herrington & Oliver, 2000; Herrington & Herrington, 2007). Students can engage with a variety of technology tools as and when required, so that they are using (and learning) the tools to achieve a real purpose rather than as skills that can be checked off as completed.

This chapter describes a project where mp3 players (Apple iPods) were used as cognitive tools to create an authentic digital story book. The task involved creating a picture-book story for children, in a digital form with sound and visual effects.

Context of the study

The study was conducted within a core ICT subject, offered at the beginning of the second year in BEd (Early Childhood) program. The subject was designed to provide preservice early childhood educators with the knowledge and skills of implementing modern ICT in a variety of early childhood settings in order to promote the development of young children. The subject aimed to address specific issues of the use of IT in early childhood education. These include:

- Developmentally appropriate ways of using ICT in early childhood settings,
- Integration of appropriate ICTs in early childhood curriculum and play, and
- Critical appraisal of ICT and computerised toys manufactured for young audiences.

Early childhood literature suggests that to be effective, ICT should be used in a pedagogically appropriate manner suitable for young children, that is, in an environment where children can play, actively explore, investigate, look things up, solve problems, and do puzzles and other activities which promote communication, interaction, discovery and problem solving (Downes, Arthur & Beecher, 2001, p. 144). It should be consistent with the child-centred philosophy of the early childhood classroom where children are active participants in their own learning and engage in a variety of hands-on activities (NAEYC, 1996a). In such an environment, the technologies would become 'integrated into the regular learning environment' of young children and would be 'used as one of many options to support children's learning' (NAEYC, 1996b).

The approach outlined above informed the design of the assignment tasks in the ICT subject for preservice early childhood educators, including the digital story task.

The authentic task

The assignment comprised a complex authentic task that included six weeks' work in a 13 week semester (Weeks 4-9). Students were required to research and write a story suitable for young children, and to then use iPods and a range of other technologies and software as necessary to create a digital version of their story. The final product, a digital story, was aimed to be suitable for educating young children in an early childhood centre. Additionally, the students were encouraged to produce the kind of digital story that could be readily created in an early childhood centre by early childhood educators together with the children in their care given the appropriate resources. There were three classes of approximately 18 students, and eight iPods available for each class.

In the first of the six workshop classes, students were introduced to the iPod and its features, and to the task of creating a digital story for young children. The construct of 'cognitive tool' was also introduced, including discussion of how the device could be used to create a story, where students might invent new ways to use the device in context. Practical aspects of the exercise were then addressed, including determining the technology that would be available to students.

Students formed groups of two or three, and one iPod was issued per group. Additional technology such as video and still cameras needed to be sourced, but generally the students themselves provided these items. The groups also had access to computers (a Macintosh lab), and additional software that was required to create the digital story (e.g., PowerPoint, GarageBand, iTunes, iMovie, iPhoto, Word, ComicLife and a range of image manipulation software programs). The students were also required to reflect on the process of creating the digital story in an online journal or personal blog.

In order to assist with the creation of a genuinely engaging and appropriate story, an author of children's books was invited to present a guest lecture for the class. In creating their stories, each group followed a different procedure but typically the processes included:

- Researching and choosing a suitable topic
- Brainstorming ideas for the story (using mindmapping software Inspiration, or pencil and paper concept maps)
- Writing and storyboarding the story
- Capturing and creating pictures and videos, or illustrations, as required
- Creating the 'pages' of the story (e.g., in PowerPoint)
- Recording audio narration (using iPods with attached microphones), and inserting music and sound effects (e.g., using software such as iMovie or Movie Maker)
- Combining all elements, together with credits, using PowerPoint, or iMovie (or similar) software.
- Creating a stand alone movie file by saving the PowerPoint story as a .mov file, or exporting the digital story (from software such as iMovie) ready for publishing either as part of a podcast, or sharing by display on the iPods.

On completion, students presented their stories in class sharing the creation and design process by way of PowerPoint presentations, movie demonstrations and explanations.

Research methodology

In order to explore the educational potential of the digital audio players (iPods), research was conducted to investigate ways of designing and implementing teaching in authentic contexts that enhance student learning with understanding. For the project as a whole, the research focus of this stage was:

- What pedagogical strategies facilitate the use of m-learning devices in authentic learning environments in higher education?

Specifically for the use of iPods in an early childhood context, the research questions comprised:

- How do students respond to the use of mobile devices within an authentic learning environment?
- What are the affordances of an iPod for creating resources for early childhood learners?

- What pedagogical strategies were required to assist the students' use of the m-learning devices as cognitive tools for their digital books?

The participants of the study involved 12 preservice early childhood educators –comprised of six story-writing groups (2 from each class). Group interviews of approximately 30-40 minutes were conducted at the completion of the task. Groups were selected on the basis of those most likely (in the view of the teacher/researchers) to provide the richest source of data across a range of views and levels of achievements. Reflective journals of participants were also reviewed and field notes taken as the task progressed. The interview questions focussed on the following areas:

- Technology affordances: What were the participants' views on the technology affordances of digital audio devices (iPods) for personal use, for higher education generally, and for early childhood education?
- Pedagogical strategies: What pedagogical strategies do participants believe facilitate the use of m-learning devices in authentic learning environments in higher education, and in early childhood education?

All data sources were analysed using a constant comparative method (Merriam, 1998) of determining major themes and issues. Data were further considered within the framework suggested by Miles and Huberman (1994) of the three stages: data reduction, data display and conclusion drawing and verification.

Discussion of findings

Students' response to iPod use in authentic learning contexts

In relation to the first research question *How do students respond to the use of mobile devices within an authentic learning environment?* in general, the preservice teachers responded very positively towards the use of the iPod, both in terms of their own learning and leisure, and in pedagogical contexts. When issued with the iPods, students were encouraged to ensure that all members of the group had a chance to keep the device for a couple of weeks and use it for a range of purposes, including leisure. In this regard, students reported using the iPod to download music into iTunes, downloading podcasts in areas of interest, and downloading television programs from sites such as the *Australian Broadcasting Commission* (ABC). They also reported using it to download books, as well as for a range of learning and reflective activities in their own roles as higher education students. For example, one student recorded her own reflections on content in another curriculum subject:

> I recorded my PE [Physical Education] notes and played it in the car, through the stereo, while I was driving along.

As might be expected, however, not all students responded positively to the devices from the outset, because of their own circumstances. For example, some mature age students reported that they did not have enough time to explore the use of the iPod for leisure because of the pressure of study, work and family commitments.

Listening to podcasts and other content sources (including the University's *EduStream*: a system to provide audio recordings of lectures, presentations and visual images) appeared to be a common use for the iPods, reflecting the multitasking role that is almost mandatory for the modern student, many of whom have jobs and families to care for. One student explained how she had used the iPod, with the microphone attachment, in a classroom practicum to quickly note comments and anecdotal reports of student progress for assessment purposes.

In terms of the authentic task that students completed in the early childhood subject, they used the iPod principally to record the audio for their digital story, and other audio aspects of the task. For example, one group used the microphone attachment on the device to record several characters' voices over a period of time. This group also used the microphones to create individual sound bites for each page of the story, so that sound could be attached independently to each slide within the PowerPoint story.

One annoying aspect of the task related to issues of compatibility between operating systems (e.g., Windows and Mac OS) and between different programs (e.g., PowerPoint to iMovie). Nevertheless, when asked what were the most positive aspects of the task, one group agreed that learning a different operating system was beneficial:

> Learning how to use a Mac, and the team work - it made us stronger and able to overcome deleting dilemmas.

Some students lost work through problems with synching on different computers with different versions of iTunes. Some students who were not familiar with iPods reported that it was not easy for them to deal with the interface. Some asked their younger siblings to assist them. More than one group also spent quite a lot of time perfecting animations and transitions in PowerPoint only to discover that these would not import into a .mov file.

As the student groups became more involved in the task, they sourced additional software in order to solve certain problems (e.g., editing of audio files or images). This in turn introduced additional issues associated with learning how to use the software and compatibility of file formats. In addition to the normal group project issues, such as coordinating meetings and participant contributions, the different levels of technology expertise was also a problem for a number of the groups. Interestingly this reduced as the project progressed and the groups gained more confidence in their ability to solve some of the technological problems. Informal lab sessions were also beneficial for sharing problems and solutions.

Generally, the response of the students to learning new and potentially complex technologies and software was made much more focussed and achievable through the use of the authentic task. The myriad of technology-related problems that were revealed in detail in many of the students' online journals were generally overcome because of a clear view of the final effects that the students wanted to achieve in their stories. This required some very advanced and creative problem solving.

Pedagogical affordances of the iPod

In relation to the second research question: *What are the affordances of an iPod for creating resources for early childhood learners?* the students generally expressed the view that such technology is not readily available nor a particularly appropriate technology for very young children. They saw the iPod as an unusual technology to use, believing quite reasonably that most children in the target group would not themselves own or have access to mp3 players. However, the participants were able to suggest a range of activities that would be possible even if there was only one iPod (such as the teacher's own, or a school's device) in use in the classroom. For example, when asked how they might use iPods with young children in an early childhood centre, one preservice teacher suggested:

> I'd definitely like to get them to write a story and paint the pictures [for a digital story]. It wouldn't be a big task … but the whole process would be fun for them. And they would really enjoy listening to the final story.

When prompted, students were able to suggest many appropriate activities using the iPod in an early childhood setting, for example:

- Recording students singing and telling stories: 'they love to hear their own voices',
- Recording classroom interactions to play back to demonstrate 'using your manners',
- Singing songs and making a class CD,
- Recording events that happened on holidays to share with the whole class,
- Recording children's voices and then letting them listen: 'your recorded voice usually sounds quite different to what you might imagine. It would be quite interesting for young children to get to know the sound of their own voice'.
- Record children's reading so they can listen and reflect on how they read,
- Teaching them reading: 'have some difficult bits of text recorded for them so they can listen if they need help',
- Keeping files as a record of children's progress ' such as anecdotal records and running records',
- Producing presentations with a variety of sounds.

One student commented:

> I feel through the tutorials, lectures and assessments I have gained some great ideas for my future classroom, in particular the digital book. I have seen how easy and enjoyable it can be.

Additionally, some of the preservice teachers anticipated that younger generations might be more familiar with the technology than early childhood educators themselves. For example one student noted:

> You wouldn't need to teach young children how to use iPods, they probably would already know!

Another pointed out that teachers might be surprised at what their children produce in working with technology:

> I think that there are probably lots of other uses that it could have with the younger generation of our students. As teachers, we set them an assessment and what they give us will surprise us because they will be giving us ideas about how to use things. They've just got that wider view of how things could be used, whereas we tend to use it the way it's been introduced to us.

When asked how iPods could be used by preservice early childhood educators in their own study at the University, the participants were able to offer a number of ideas. As well as suggesting the downloading of podcast lectures, students suggested other more reflective tasks such as listening to supplementary audio recordings in the car while driving, or making anecdotal records about their own learning. One student also suggested that the iPod could be used by lecturers 'to capture the students' progress with the task, not only the final product'.

After brainstorming the potential uses of the iPod both in class and in the interviews, the students were able to suggest many interesting and innovative pedagogical uses of the device both in their roles as early childhood educators and as students at university.

Pedagogical strategies

The final research question asked: *What pedagogical strategies were required to assist the students' use of the m-learning devices as cognitive tools for their digital books?*

The design of the pedagogical strategies in the early childhood learning environment drew upon principles of authentic learning, namely: providing an authentic context, an authentic task, expert performance, multiple perspectives, collaboration, reflection, articulation, scaffolding, integrated assessment (Herrington & Oliver, 2000; Herrington & Herrington, 2007).

The use of the authentic context and task of creating a digital story book appropriate to the teaching setting of early childhood proved to provide a strong framework for learning the ICT skills required of the introductory course. Not only did students learn how to use standard software packages such as PowerPoint and iMovie, but they also acquired and used additional software to achieve a given effect (e.g., Garageband, Audacity, Photoshop). Since many students used hand-drawn illustrations, they also learned processes such as scanning and importing images, and they learned how to import and edit sound, music and sound effects. One student commented on this learning:

The product may not have been exactly what we wanted but we learned so much about what works, what doesn't work and how to apply the technology, that the product itself wasn't as important for learning as the process was.

Expert performance was provided in story telling largely through the guest lecture provided by a well-known children's author. In terms of the technology skills to be learnt in the course, it was provided through lectures and tutorials and the modelling of processes by course teachers, but also through reference to self-guided resources such as online support from hardware and software companies, and

printed sheets with basic instructions that were available from the subject website. This kind of support also provided multiples perspectives on the task and how it could be achieved. Some students said they perhaps would have benefited from more guided time with an expert for exploring the iPod and some of the pieces of essential software such as iMovie. They felt that self-exploration was beneficial but some concentrated input regarding the tools in the early stages of the task would have assisted many of the students. Nevertheless, such direct instruction was not part of the philosophy of the approach, and the sophisticated problem solving required by students, and the learning that resulted, in some ways vindicates this less didactic approach. As one student noted:

> This was certainly a project which had it all, tears and laughter, frustration and excitement and even a little swearing thrown in for free. I am glad that we did not take the easy way out in the beginning. I have certainly learnt a lot.

Students collaborated in groups to achieve their final product and generally this was very successful. Students were advised to share the iPod during the weeks of use, so that all could become familiar with its features. One student pointed out: 'It was hard to share the iPod. It would be great to have one each'. Some groups also chose to co-operate rather than work together in a truly collaborative way. For example, one group chose to assign the iPod to a single person 'because she had a younger brother who had an iPod and could explain to her how to use it and during the whole task she was in charge of it'.

Through the group process and through public presentations of their work, the students had the opportunity to articulate their growing understanding of the technologies and processes they were learning. They were also able to reflect both *in action* and *on action* in this task (Schön, 1987), in action as they made decisions about how to proceed, and on action in their reflective journals. One student noted in relation to the problem-solving aspect of their reflection in action:

> We faced a LOT of problems, but by asking people and through trial and error we came up with a solution. I really enjoyed working on our book with [my group] and I hope that our final product emulates the good times we had completing it!

The teachers' roles in the activity were: to provide initial information on processes; to support and scaffold the students as they worked on their stories; and to assess the students' stories and journals. The aim was to facilitate learning and to encourage the students to try new and innovative things with technology. This was illustrated in one student's comment about no longer being afraid of the technology:

> What a challenge, but what a great feeling of achievement we all feel now its complete - well almost. We still need to transfer it on to the iPod and save it to Quicktime, but piece a cake right?? Yes indeed, these tasks no longer scare me, because we have proved to ourselves that with a little trial and error, perseverance and a few tears, we can succeed.

Conclusion

The digital story task was one that used an authentic approach to the learning of introductory ICT skills in an early childhood degree. As such, it proved to provide challenging and rewarding opportunities for students to learn to use mobile and other technologies not as an object of study but as cognitive tools to achieve a genuine product and significant learning outcome. This was evident to the students despite problems, issues, frustrations and tears during the process. Nevertheless, on completion all the products were polished and successful. The students enjoyed very much the process of sharing their accomplishments. One student summed up the purpose of the course well with this revealing comment:

> This has been a really challenging assignment but I did learn things I had never even heard of before, I guess that was the idea!

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